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Break-Even Points in Farming

FARMERS' costs climbed rapidly in 1948. The 18.2 billion dollars farmers are estimated to have spent for production expenses is almost a billion and a half more than in 1947 and more than gross farm income in any year before 1942.

With prices of many farm products leveling off or declining last year, gross farm income increased only slightly from 1947. This was the first year in a decade that gross income failed to rise more than costs. As a result, farmers' net income fell below 1947.

Not only are farmers spending more for production items than ever before, but a much larger proportion are cash expenses than after World War I. Consequently, farmers can't reduce their cash outlays during a price squeeze in the same way that they did formerly.

For example, horses and mules fed largely from farm-produced feed furnished most of the farm power just after World War I. Today, fuel and oil and repairs for the farm tractor are out-of-pocket expenses. A larger share of family living costs also are cash expenses. Most farms now have electricity, and fuel for the farm furnace

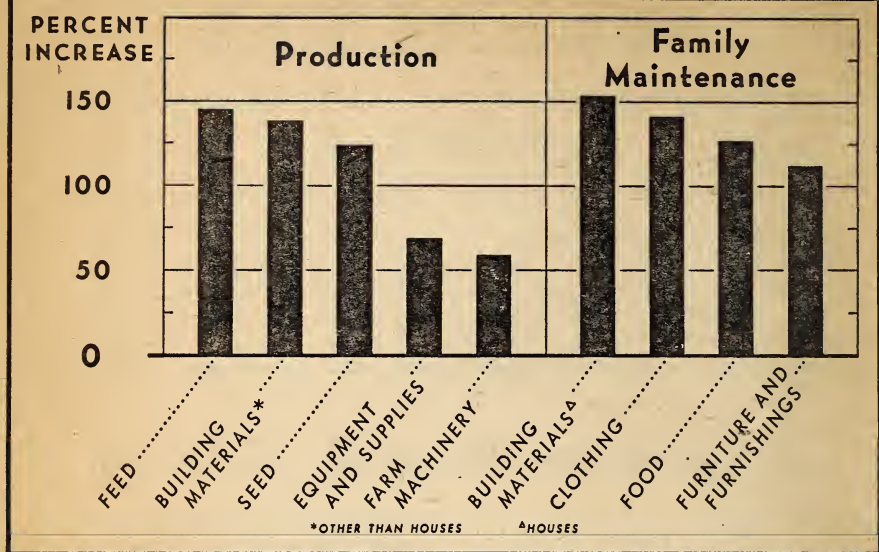
is delivered by the oil man or the coal dealer rather than being cut from the farm woodlot.

Farm real estate taxes, another important cash cost, have been rising for four consecutive years. They are not likely to drop quickly in a period of declining farm prices. Land values for the country now average the highest in history and are two to three times higher than in 1935-39 in many States.

Inventory values of livestock and machinery are about three times their prewar levels. In this way, much of the income improvement of recent years has become capitalized into higher costs for the young man who is getting started in farming. He will have to invest two to three times as much for land, equipment, livestock and supplies as before the war. As long as net farm incomes are high, this is not a serious obstacle to young farmers. But if prices and incomes turn down, heavy debt on such an investment could be an unbearable burden.

Farm mortgage debts are much lower now than in 1920 (they were about 5 billion in 1948, compared with over 8 billion in 1920) but the debt load has been rising since 1946, and interest

INCREASE IN PRICES PAID BY FARMERS, 1935-39 TO 1948



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rates have stiffened during the past year. Information on the debts of individual farmers is not available, but many undoubtedly have a heavy load of both mortgage and short-term debts.

Although prices received for farm products have been going down in recent months they still average higher than prices paid. The parity index was 109 in December 1948 (1910-14=100). But prices farmers pay for labor and materials used in production, except for farm-produced commodities like feed, show no signs of a downturn.

Costs Lag On Downturn

Table 1 shows that in periods of rising prices farm products usually go up farther and faster than farm costs. However, table 1 also indicates that when farmers' prices are declining, prices they pay tend to lag. Even when they do decline, they fall only about half as much as prices received.

If prices received by farmers should decline considerably, and cost rates lag as in the past, we would need to give

considerable attention to *break-even points* in the farming industry.

Family Absorbs "Squeeze"

We hear a great deal about break-even points in other business but very little about them in farming. One reason is that on family farms a price-cost squeeze is frequently absorbed by the farm family accepting a lower return for its labor and investment. But this can be done only at the expense of family living and maintenance of the farm plant. On farms free of debt, the income left after paying cash operating expenses can be used for family living and upkeep of the farm. If the income falls, outlay for family living can be reduced and repairs and replacements to the farm plant held to a minimum. In such cases, the break-even point depends mainly on the extent to which the family is willing to lower its level of living in order to stay on the farm. On farms on which there is a large debt, the interest and amortization payments come out of what otherwise would be available for family liv-

ing. Debt service and family living become competitive in low income periods.

Figuring Break-Even Points

Break-even points can be calculated for farms with varying amounts of debt by making a somewhat arbitrary allowance for family living. The break-even point will, of course, be different on every farm and it will vary a great deal among the different types of farming. But, as we have seen, the high proportion of cash expenses to total expenses and the tendency of costs to decline more slowly than prices of farm products affect farmers generally.

Suppose that prices received were to go down to 70 percent of their 1947 average; they would then be 195 percent of the 1910-14 average. Suppose also that prices paid, interest and taxes, dropped only half as much—about the same as in previous periods of declining prices. They would then average 196 percent of 1910-14 and the parity ratio would be only slightly below 100. If prices received declined to 60 percent of 1947 levels and again prices paid dropped only half as much, the parity ratio would be approximately 90, which is the upper level of present support price legislation.

These illustrations are not a forecast that prices will fall to the levels indicated. And of course some commodities are protected by legislation against so large a drop. But table 2

shows what might happen to the income of farm families on Midwestern hog-dairy farms if the prices those farmers receive for their products were to drop to 70 percent of 1947.

The net cash income in 1947 on Corn Belt farms of this type was \$6,177 when rent and interest payments are excluded. These must come out before we can arrive at the income available for family living. If we assume that such a farm is operated by a young owner who owes \$20,000 on the farm, livestock and equipment, he would have to pay about \$1,100 in interest and amortization payments. This would have left \$5,077 for family living in 1947. But if prices for the products sold from this farm drop to 70 percent of 1947 levels, the income available for family living would be down to \$2,432. Since the index of prices paid for family maintenance is now 220 percent of 1935-39 this would be equivalent to a prewar income of about \$1,100.

Is Income Adequate?

Is that the break-even point on this kind of a farm? The answer of course depends on whether farmers on these farms consider such an income adequate for family living. It also depends on whether the drop in income is temporary or more permanent. If farm prices remain at the lower levels for several years some of the costs might drop more than is indicated in table 2. But it would also be necessary

Table 1. Indexes of Prices Received and Paid by Farmers at Various Dates (August 1909-July 1914 = 100)

Date	Prices received	Prices paid by farmers		
		For living and production, interest and taxes	For production	For family maintenance
1920	211	202	174	222
1921	124	165	141	161
1929	149	167	147	159
1932	68	124	109	108
1939	95	125	122	120
1947	278	231	233	255
1948 ¹	287	249	255	271
Dec. 1948	268	247	250	270

¹ Preliminary.

to spend more for farm maintenance, which could be postponed if the low incomes for a year or two were followed with years of higher income.

What protection do farmers have against a possible price-cost squeeze? They do have price support legislation. But even high-level price supports cannot furnish complete protection because in a sagging market they would have to be combined with output restriction. That in turn would mean a smaller gross income, and probably higher costs per unit of product.

Demand Will Vary

The best protection, of course, would be sustained demand for farm products, but some ups and downs are to be expected, at least in the transition period that we are now experiencing. Farmers cannot afford "to shut up shop" during a price drop if they depend on farming for a living. Some retrenchment is possible, of course. Some cash expenses can be cut but there is less opportunity for this on the highly commercialized farms of today than in 1920. Farmers who are free of debt and who have adequate financial reserves, can adopt soil-maintaining rotations and relieve the pressure both on the farm plant and on the

work load for the farm family. But most of them would be likely to maintain output if they thought that would mean higher incomes to them.

The farmers who are heavily in debt would be forced to produce at high levels in order to meet their fixed charges. Credit programs are geared to the expectancy of a stable rather than fluctuating farm income. Therefore, interest and amortization payments are a heavy load in years of adversity.

It may be possible to make the farmer's cost structure more flexible. In recent years we have experimented with variable payment and prepayment loan programs. Many leases are now written on a sliding scale, and it seems quite possible to do this generally. Landlords and tenants would then share both the ups and the downs. Some form of variable payment or prepayment might be adopted for taxes.

In periods of lower prices, farmers need to utilize every opportunity to reduce costs. Farmers cannot influence a great deal the prices that they pay for labor and production supplies, but they can adopt improved practices that lower costs per unit of product. These practices become doubly significant if farmers are caught in a price-cost squeeze. Many improved practices involve additional current expenses or new investment that may not be feasible in periods of low prices, but if they greatly increase the output per worker they are also likely to result in higher net incomes to the farmers who adopt them, even in periods of adversity.

Table 2. Investment, Income, and Expenses on Family-Operated Hog-Dairy Farms in the Corn Belt, 1947, and Under Possible Condition of Lower Prices ¹

Item	1947	Prices 70 percent of 1947
Acres in farm.....	144	144
Total cash receipts....	9, 175	6, 423
Total cash expenses....	2, 998	² 2, 891
Net cash income.....	6, 177	3, 532
Interest and amortization payments ³ ..	1, 100	1, 100
Available for family living.....	5, 077	2, 432

¹ Assuming the same output as in 1947.

² Feed, livestock, seed, and other supplies at 80 percent of 1947 levels. Hired labor at same rates as in 1947, and machinery, building, taxes, telephone, electricity same as 1947.

³ Assuming total debts of \$20,000 and interest and amortization charges averaging 5½ percent.

Build Reserves Now

Perhaps most important of all, however, is greater attention *now* to building up reserves from current incomes to tide farm families over any future periods of adversity. Farmers as a group have been reluctant to invest their savings in anything other than the farm plant. But other investments are available that could constitute safe and liquid reserves to help tide over low income periods. Payment of debts is, of course, one of the best ways of building protection against financial adversity.

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Outlook Highlights

... January 1949 ...

Land Values Continue Rise

Farm real estate values rose 2 percent from July 1 to November 1. The national average is now 8 percent above November 1, 1948, 113 percent above 1935-39, and a new record. In 14 States, values were up less than 1 percent during the 4 months. Increases of 4 percent or more occurred in eight States.

Real Estate Market Survey

A recent survey of over 6,000 farm real estate dealers and others close to the market brought out some interesting information. The highlights:

As a result of declines in prices of grains and some livestock items, many prospective buyers are concerned about possibility of further declines in farm income. This is making them more cautious and selective in their buying or is causing them to delay purchases until price trends become more certain.

On the other hand, those who own farms in the better agricultural areas plan to hang on to them as long as current income stays high and no other investments paying comparable returns are available.

Demand for small farms for rural homes and part-time farms continues strong in areas where there is a lot of industrial development. Buyers tend to be particular about buildings, location and improvements; often pay more than the farm's agricultural value.

Midwest reports indicate a generally strong farm real estate market without the optimism of a boom.

Generally, buyers realize the need for a substantial down payment as protection against future uncertainties. Lenders in most cases have refused to finance buyers with small equities.

Prices 11 Percent Below Year Ago

Average prices received by farmers were 11 percent below a year earlier in mid-December as the decline which began last summer continued. Feed grains and hay were off 40 percent from

December 15, 1947, the sharpest decline among the commodity groups. Food grains were down 26 percent, cotton 13, oil-bearing crops 23, truck crops 29, meat animals 4, dairy products 9 and poultry and eggs 1 percent. Only gains over last year were made by the tobacco and fruit groups. Both were up 10 percent.

Parity Ratio at 5-Year Low

With prices received by farmers continuing down, the index of prices paid by farmers including interest and taxes in mid-December was 247, the same as in November and 2 points higher than on December 15, 1947. This brought the parity ratio down to 109, 14 points below a year earlier and the lowest since September 1942.

Nitrogen To Continue Tight

Despite a generally brighter outlook for fertilizer for 1948-49, prospects for nitrogen are only slightly better than in 1947-48 and supplies can be expected to continue tight, warns the United States Department of Agriculture.

Supplies of nitrogen for the current fiscal year are expected to be about 7 percent about 1947-48 instead of the 10 percent increase expected earlier. Supplies of phosphate are expected to increase 5 percent over 1947-48 and those of potash 10 percent.

(Continued on page 16)

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Costly Development Is Needed For Most Potential Farm Land

ABOUT 80 million or more acres of undeveloped land in the United States are estimated to be suitable for farming. These lands are potentially as productive as much of the land now being farmed and if the need for farm products stays about as great as it is now they could be developed and bring favorable returns.

However, the outlook is not promising for the man who yearns to do as his pioneer forefathers did—build a place of his own from raw land. Much of our undeveloped land is within going farms and probably will be needed to enlarge their productive acreage. In addition, on about half of the 80 million acres, large-scale drainage, irrigation and flood-control projects will be needed before the land can be used for farming. All the large areas potentially suitable for agriculture require drainage or irrigation and some also need clearing or flood protection.

At present, farmers are developing an estimated 1 to 1½ million acres of new cropland per year. A large part of this acreage is not a net gain in cropland but is replacing land going into building sites for towns, roads, airports, and other nonfarm uses, or is taking the place of rough or eroded land being shifted to pastures or forest. Much of the new land is going to enlarge farms which have too few acres.

Sources of New Land

Land suitable for future development can be classed as follows:

Land from drainage and clearing.—About 60,000,000 acres scattered throughout forested areas can be developed by drainage, clearing, or both. About half is estimated to be in farms, the rest mostly in nonfarm tracts intermingled to some extent with developed land. Nearly all land needing drainage also must be cleared.

Most of the land that can be drained and cleared is in small blocks but some large areas exist. The largest concentration is about 5 million acres in the

Mississippi Delta. Other large concentrations are in the Southeastern coastal regions and the Lake States. These areas await major flood control and drainage projects. Even in many smaller areas, individual farmers cannot drain their land until major drainage outlets are constructed or improved. After this is done, however, improved equipment makes it easier for them to do the work. More than half of the potential agricultural land in need of drainage still is without drainage district organization. Most of the drainage projects underway or proposed are to provide better drainage on land already in crops or pasture.

Big Projects Needed

Land from irrigation.—It is estimated that about 20,000,000 acres of land in the West can be irrigated. For most of this, however, large dams for water storage and expensive canals and other improvements would be needed—projects that would require public assistance. Much of the present irrigated areas do not have enough water and most proposed irrigation projects are partly for increasing water supplies in these areas.

Irrigation could provide land for some new farms. It would also permit more intensive farming resulting in greater production and more farms on the same land. However, this would depend on the willingness of farmers to change from dry farming to irrigation farming. Farmer's decisions on this point would largely depend on the relative profitability and on public policy for distributing the water.

Use of well water is about the only kind of irrigation that now can be undertaken by individuals. Eventually, however, this also will depend on public policy since over-expansion of wells may lower the water table.

These estimates of potentially irrigable land include only the arid and semiarid areas in the Western States. In the rice areas of Arkansas, Louisi-

ana, and Texas, irrigation can be expanded when warranted by the demand for rice. There is some discussion of increasing irrigation facilities in some special crop areas in Eastern States as an insurance against droughts. This would not add much more cropland but would increase productivity of land.

Most Improvements Excluded

Much of the land being improved already is being farmed and is not included in the 80-million-acre estimate of potential farm land. Farmers are constantly improving their land. In the Northeast, they are using tractors and bulldozers to remove boulders from fields and pastures and to bury old stone walls that divide farms into small plots. In the Southeast, farmers are filling gullies and installing sod waterways which adds to the productive acreage and increases the size of fields for more efficient tractor operations. In the Midwest, farmers have been pulling out hedgerows which use land and moisture needed for crops. Improved equipment has enabled irrigation farmers to do a better job of leveling their land.

In all parts of the Nation, pasture improvement, more definite rotations, the use of lime and phosphate and soil conserving practices are increasing the productivity of land. They often are more effective than new land development in adding to the immediate supply of food and fiber. In the long run view, however, development of new land is significant.

Up to Owners

In the next few years, farmers who want to enlarge their business probably will develop a considerable acreage already in their farms. Most of this land can be developed whenever the owners decide to do the work. Tractors and large-scale earth moving and land-clearing equipment has made the job much easier than in earlier years. Higher incomes have made it possible for farmers to buy this equipment or hire the work done. In general, development of this land will increase the size of present farms rather than create new ones.

Increased mechanization may stimulate improvement of undeveloped land in farms. Since machines make it possible to do more work with less labor, many farmers must enlarge their business to keep themselves and their families fully employed. Improvement of land in their farms is an effective way to do this where additional land cannot be bought at reasonable prices.

However, farmers' decisions on development and improvement of land on farms will depend on several things: prices for farm products, future soil conservation, price support, marketing or other government programs, trends in population and food consumption, and the extent of our foreign trade.

The rate of development for new areas which require large-scale irrigation, drainage or flood-control projects will depend on our national policy. This, in turn, will depend on such matters as the need for food and fiber, the urgency of public appropriations for other purposes and the need for public works to provide jobs.

Shifts to Balance

Removal of land from agriculture also will continue. Unproductive crop or pasture land will be shifted to forestry. In addition, some productive land will continue to be shifted to non-farm uses. These shifts probably will about equal new developments in the next few years.

Although considerable new land is likely to be developed in coming years, opportunities for new farms are not as attractive as in earlier times. Many other alternatives, both on and off the farm, that provide immediate returns to labor are open to individuals. Most undeveloped land is less productive than most of the land already in farms. For these reasons, the future value of new farms to individuals may be less than the cost of development plus the income lost while the land is being developed. If an individual has some capital, in most instances it will be to his advantage to purchase a productive going farm rather than develop one from raw land.

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Table 1. Break-Even Prices for Hogs

(Price hogs must sell for one month from now to permit feeder to break even in putting on 50 pounds additional weight on hogs of different weights with different prices for corn and hogs, now)

Price of corn per bushel, now	Price of hogs per hundred pounds, now							
	\$10.00	\$12.50	\$15.00	\$17.50	\$20.00	\$22.50	\$25.00	\$27.50
On hogs weighing 200 pounds, now								
\$1.00	\$10.25	12.25	14.25	16.25	18.25	20.25	22.25	24.25
1.25	10.81	12.81	14.81	16.81	18.81	20.81	22.81	24.81
1.50	11.38	13.38	15.38	17.38	19.38	21.38	23.38	25.38
1.75	11.94	13.94	15.94	17.94	19.94	21.94	23.94	25.94
2.00	12.50	14.50	16.50	18.50	20.50	22.50	24.50	26.50
2.25	13.06	15.06	17.06	19.06	21.06	23.06	25.06	27.06
On hogs weighing 225 pounds, now								
1.00	10.27	12.32	14.36	16.41	18.45	20.50	22.55	24.59
1.25	10.80	12.84	14.89	16.93	18.98	21.02	23.07	25.12
1.50	11.32	13.36	15.41	17.45	19.50	21.54	23.59	25.64
1.75	11.84	13.88	15.93	17.97	20.02	22.07	24.11	26.16
2.00	12.36	14.41	16.45	18.50	20.55	22.59	24.64	26.68
2.25	12.89	14.93	16.98	19.02	21.07	23.11	25.16	27.21
On hogs weighing 250 pounds, now								
1.00	10.33	12.42	14.50	16.58	18.67	20.75	22.83	24.92
1.25	10.83	12.92	15.00	17.08	19.17	21.25	23.33	25.42
1.50	11.33	13.42	15.50	17.58	19.67	21.75	23.83	25.92
1.75	11.83	13.92	16.00	18.08	20.17	22.25	24.33	26.42
2.00	12.33	14.42	16.50	18.58	20.67	22.75	24.83	26.92
2.25	12.83	14.92	17.00	19.08	21.17	23.25	25.33	27.42
On hogs weighing 275 pounds, now								
1.00	10.34	12.46	14.57	16.69	18.80	20.92	23.04	25.15
1.25	10.81	12.93	15.04	17.16	19.28	21.39	23.51	25.62
1.50	11.29	13.40	15.52	17.63	19.75	21.86	23.98	26.09
1.75	11.76	13.87	15.99	18.10	20.22	22.33	24.45	26.56
2.00	12.23	14.34	16.46	18.57	20.69	22.81	24.92	27.03
2.25	12.70	14.81	16.93	19.04	21.16	23.28	25.39	27.50

HOW HEAVY

SHOULD I FEED MY HOGS?

HOW HEAVY should a hog be to make the most money when it's sent to market?

That's something every farmer has to figure out for himself; and the answer changes from one season to the next. But here is a rough guide that should make the figuring a little easier. It is based on a study of feed consumption made by the United States Department of Agriculture and several State experiment stations. Detailed results were published in United States Department of Agriculture Technical Bulletin No. 894, *Feed Consumption and Marketing Weight of Hogs*, by L. J. Atkinson and John W. Klein. This guide fits the average farm over several years; but you may have to adjust it some to fit your farm and the year.

The Problem

Suppose you are wondering whether to put an extra 50 pounds gain onto one of your hogs, and it will take a month to do it. Then your problem is to figure out how much the extra 50 pounds of live hog will be worth; and how much it will cost to keep a hog and feed it for an extra month, and how much the price of hogs is likely to change in a month.

Generally, it takes about 4.5 bushels of corn or its equal in other feeds to fatten a 200-pound hog up to 250 pounds. It takes around 4.6 bushels of corn or its equal in other feed to put 50 pounds of gain onto a 225-pound hog, 4.8 bushels on a 250-pound hog and 4.9 bushels to put 50 pounds of gain on a 275-pound hog, fattening it up to 325 pounds.

Feed is usually about four-fifths of the total cost of fattening hogs. You would just about break even if you got a return of \$1.25 for each \$1 worth of feed you put into them.

The two tables accompanying this article will be helpful in deciding whether to sell your hogs now or hold them another month.

Table 1 shows the lowest selling price per hundred pounds for hogs at which you could expect to break even with different current prices for corn and hogs. The selling prices include an allowance for the cost of feed and other costs such as labor and risk.

How To Use Tables

Here's the way to use table 1. Suppose your hogs weigh 225 pounds each. The current price for them is \$25 per hundred pounds. The price of corn is \$1.25 per bushel.

Turn to table 1 and find the third column from the right which has \$25 in the box at the top. Drop down to the section marked, "On hogs weighing 225 pounds now." Find the price opposite the \$1.25 in the left-hand column labeled "Price of corn per bushel now." This price is \$23.07 per hundred pounds—the price you must get to break even.

Now that you have the break-even price, the next step is to determine what is likely to happen to prices within the month. This is about the most difficult problem farmers face. Table 2 shows for different months the number of years from 1932 to 1941 that hogs of a given weight increased or decreased in price after putting on 50 pounds of gain.

Shows Price Changes

For example, it shows that starting with a 200-pound hog in January, in 3 years out of 10 the average price increased 3 to 9 percent in 30 days and in 2 of the years it increased 10 percent or more. In only 2 years was there a decrease in price and it was less than 10 percent. This applied about as well to hogs weighing 225, 250, and 275 pounds in January as to 200-pound hogs.

Table 2 indicates that price increases were most frequent from May to June and from June to July. On the other hand, sharp price decreases occurred

most frequently from September to October. This decline continued from October to November. Price decreases occurred most frequently if the hogs weighed 275 pounds at the beginning of the 30-day feeding period.

Although table 2 shows a fairly regular price change from month to month from 1932 to 1941, you cannot be sure that the same kind of a change will take place this year or next. Price prospects need to be considered on the

basis of the current situation. You can usually obtain current outlook reports in the county extension office. These together with table 2 should help you size up price prospects for the next 30 days.

After you have decided on the price you expect a month from now, you can compare it with the break-even price obtained from table 1. If it is higher than the break-even price, feeding your hogs 30 days longer will be profitable.

Table 2. Price Changes for Hogs, 1932 to 1941

[Number of years out of 10 that hogs of different weights in a given month increased or decreased in price when fed an additional 30 days and gaining 50 pounds]

Month	200-pound hogs fed 30 days more					225-pound hogs fed 30 days more				
	Price rose		Price changed less than 3 percent	Price fell		Price rose		Price changed less than 3 percent	Price fell	
	10 percent or more	3-9 percent		3-9 percent	10 percent or more	10 percent or more	3-9 percent		3-9 percent	10 percent or more
January	2	3	3	2	.....	2	3	3	2	.....
February . . . . .	.....	4	2	4	.....	.....	4	1	5	.....
March . . . . .	.....	2	3	2	3	.....	1	4	1	4
April	1	4	.....	3	2	1	3	1	3	2
May	1	5	2	1	1	1	4	2	2	1
June	3	5	2	.....	.....	3	3	3	i	.....
July	2	2	2	1	3	2	1	3	.....	4
August	2	.....	5	2	1	2	.....	4	3	1
September . . . . .	.....	.....	1	3	6	.....	.....	1	3	6
October . . . . .	.....	1	1	5	3	.....	.....	1	6	3
November	1	3	1	2	3	.....	3	2	1	4
December	2	2	4	2	.....	2	1	3	4	.....
	250-pound hogs fed 30 days more					275-pound hogs fed 30 days more				
	Price rose		Price changed less than 3 percent	Price fell		Price rose		Price changed less than 3 percent	Price fell	
	10 percent or more	3-9 percent		3-9 percent	10 percent or more	10 percent or more	3-9 percent		3-9 percent	10 percent or more
January	2	4	2	2	.....	2	3	2	3	.....
February . . . . .	.....	4	1	5	.....	.....	4	1	5	.....
March . . . . .	.....	2	2	3	3	.....	2	2	2	4
April	1	3	1	2	3	.....	3	1	2	4
May	1	5	1	2	1	1	5	2	1	1
June	2	3	4	.....	1	3	3	3	.....	1
July	2	1	2	1	4	2	.....	2	2	4
August	2	.....	4	4	.....	2	.....	3	5	.....
September . . . . .	.....	.....	1	3	6	.....	.....	.....	3	7
October . . . . .	.....	.....	1	5	4	.....	.....	1	5	4
November . . . . .	.....	3	2	1	4	.....	3	2	1	4
December	2	1	4	3	.....	2	1	2	5	.....

If you like to do arithmetic, you can figure break-even prices without table 1. Using the same example as above, this is the way it is done:

With the price of hogs \$25 per hundred now, a 225-pound hog will sell for \$56.25.

It usually takes 4.6 bushels of corn or its equal to put an additional 50 pounds on a 225-pound hog. With corn at \$1.25 per bushel, the feed cost is \$5.75.

Figuring Total Cost

Other costs usually amount to 25 percent of the feed cost. In this case, other costs would be \$1.44 bringing total costs to \$7.19.

Adding the cost figure to the value of the hog now ($\$7.19 + \56.25) gives \$63.44. Divide \$63.44 by 275 and multiply by 100 and you get \$23.06—the price your hog must sell for a month from now in order for you to break even.

Figuring the return for every dollar of feed also can be worked out easily. In our example, a 225-pound hog could be sold now for \$56.25. Suppose prospects indicate that prices will decline 5 percent to \$23.75. Thus, a month from now when your hog weighs 275 pounds, you expect him to bring \$65.31, or \$9.06 more than if you sold him now.

Return Per Dollar

In the month, you will put \$5.75 worth of corn into him. By dividing \$5.75 into \$9.06, you get \$1.57, the return per dollar of feed. Since you just about break even if you get a return of \$1.25 for every \$1 worth of feed, putting on the 50 pounds additional weight would be profitable even though prices went down a little in the 30 days.

Ralph D. Jennings
Bureau of Agricultural Economics

Why Grain Prices Fall Below Loan Level

LAST YEAR prices of most of the important grains dropped below the Government loan rates as the big 1948 crops were harvested.

Average prices received by farmers for wheat, oats, and barley were below the loan rates in August and September, but by November prices of these grains had advanced to or a little above the loans. The average price of corn from the record 1948 crop had dropped 23 cents per bushel below the loan by mid-November. Grain sorghum prices have been below the loan level since August.

There are many reasons why individual farmers sell their grains below the loan. The three that follow appear to be among the more important;

Storage.—Many farmers have had inadequate storage. Many others don't have storage, since they usually sell their crops at harvest time. Insufficient farm storage resulted in sale of small grains this past summer that otherwise could have been stored under a loan program. This also helped depress corn prices, although adequate temporary storage can be more readily pro-

vided for corn than for the small grains.

Quality.—Some of the difference between the average farm price and the loan rate is due to differences in quality. The loan rate applies to grain of a specific quality, while the farm price is the average of all grain sold, regardless of quality. Farmers are willing to sell high moisture corn below the loan rate, since such corn either would be ineligible for loan or would be placed under loan with a discount in weight to allow for the moisture content. Other grains also may run lower in quality than is permitted for loans, especially in some areas.

Small producers.—Many farmers producing small quantities of grain do not consider it worth while to take advantage of the loan programs. Even farmers producing a large volume of grain may not take out loans if the difference between the local market price and the loan rate is small, because of the small additional cost and time involved in taking out the loans.

M. Clough
Bureau of Agricultural Economics

Outlook Points to Market Problems for Nonfat Dry Milk

OUTPUT of nonfat dry milk solids in the United States has more than doubled in the last decade and long-range production prospects indicate further increases. Trends in consumption, however, emphasize the need for expanding existing markets or developing new domestic outlets if we are to avoid troublesome surpluses.

In recent years, the United States has produced well over 600 million pounds of nonfat dry milks annually. About two-thirds has been used in the United States and the rest shipped abroad.

Most of these shipments apparently have been for relief feeding or for military feeding of civilians in occupied territories. Only a small part has gone to commercial importers.

Competition to Increase

ECA countries are likely to take sizeable imports for a time. In addition, sales to Latin American and Asiatic countries may be increased by education and promotion. However, increasing production in exporting countries such as Canada, Argentina, Australia, New Zealand, and Denmark and in such importing countries as the United Kingdom and Belgium makes it probable that the United States exporters will meet increasing competition. Our commercial exports are not likely to increase much, if any, in the next few years.

During the first 9 months of 1948, production of nonfat dry milk solids was 10 percent less than a year earlier. This was about enough to meet domestic and export demand at prices about 3.5 cents a pound higher than in 1947. The decline in output was due to (1) the decline in milk production; (2) the shortage of feed during the first half of the year which encouraged the feeding of farm-separated milk in hog, poultry and egg producing areas; and (3) the relatively high proportion of manufacturing milk used in evaporated milk and cheese which further limited the supply of milk available for factory

separation and production of nonfat dry milk solids.

This situation is not expected to last. Over the next few years, a gradual increase in the rate of milk production is expected. In addition, farmers are likely to market a larger proportion of their milk as whole milk. This probably will increase the supply of factory separated milk. The extent of this increase will depend upon the demand for factory separated cream and skim milk products compared to whole milk products.

To Affect Farm Prices

For example, an increase in the demand for such products as ice cream, fluid cream, and butter would increase the supply of factory separated milk. This would be likely to increase supplies of nonfat dry milk solids since drying is now the chief method of concentrating and conserving factory separated milk. As a result, the prices farmers will receive for milk will be affected by the market for nonfat dry milk solids.

With prospects for increased production of nonfat dry milk solids and for a decline in exports, the United States market will become increasingly important. For this reason, it is well to examine the major existing and potential domestic outlets.

Bakeries Take Most

In 1941, before we entered the war, about 54.8 percent of all nonfat dry milk was used in bakery products; 13.7 percent in ice cream; 10.7 percent by the Government largely for lend-lease shipments; 7 percent in buttermilk, cottage cheese and chocolate drink; 6.3 percent in sausage and other meat products; 3 percent in confections; 2.8 percent in prepared flours; 1.4 percent in institutional cooking; and about 0.3 percent was sold for household use.

Bakeries probably will continue to be the principal consumers. Advantages over fluid and condensed milks include:

less storage space; less refrigeration; greater ease of handling; reduced loss from spilling, spoiling and sticking; and more uniformity of raw product. If all milk requirements of bakeries were supplied by nonfat dry milk solids, about 500 million pounds could be used annually according to trade estimates. This volume may not be reached for some time, but considerable expansion appears possible.

The ice-cream industry appears likely to continue as one of the principal outlets. Nonfat dry milk solids are well adapted to its manufacture.

A Superior Filler

Opportunities of increasing the use of nonfat dry-milk solids in cultured buttermilk, cottage and baker's cheese and chocolate drinks appear broad. Improved processes in the preparation of dry milk especially for these products are being developed.

Dry milk is used in bolognas and frankfurters, head cheese, beef loaves, pork sausage and hamburger. It is superior in nutritive value and flavor to other fillers often used.

Confections probably will offer an increasingly important outlet for nonfat dry-milk solids as the advantages of this product become more generally known. Production of confections appears likely to expand as the population increases, particularly if consumer incomes stay high.

Nonfat dry milks appear practically without rival for use in commercially prepared biscuit, cake, doughnut, pancake, and similar flours and mixes. The sharp increase in production and sales of these products suggests that this market may expand considerably as the advantages of nonfat dry milks become better understood.

Other Outlets

Other processes for which nonfat milk appears particularly adapted:

(1) The manufacture of processed cheese foods for which it is used to increase moisture content and to obtain improved flavor and appearance. Products made with nonfat dry milk are less expensive and contain approximately the same nutritional elements as natural cheese. In addition, they

contain some of the milk sugar and other soluble foods which are drained off with the whey in the manufacture of cheese.

(2) The making of processed butter and of margarine. Nonfat milk increases the nutritional values of these products by adding proteins, lactose, minerals, and some vitamins. Production of processed butter has been steadily declining, but output of margarine has increased sharply and may become an important outlet.

The principal potential use of nonfat dry milk solids by household consumers, restaurants, hotels and other institutions seems to be in the preparation of foods. As in prepared mixes, dried milks can be used directly in any desired proportion without first reliquefying. Among the foods which could be made more nutritious by the use of dry milk are cereal dishes, hot-cakes, muffins, gingerbread and other cakes and cookies, casserole dishes, homemade ice cream, soups, gravies, sauces, custards and puddings.

Consumer Response Disappoints

Another possible outlet for nonfat dry milk is in fluid markets in times of milk shortages. This would require that the product be reliquefied. So far, the problem of reliquefying dry milks together with the flavor has hindered their use for drinking. Use for this purpose is not likely to increase much until a more soluble milk is developed and a satisfactory household mixer is manufactured.

This article is based on the bulletin, The Dry Milk Industry, by Hugh L. Cook, of the Bureau of Agricultural Economics, and George H. Day. The project was undertaken cooperatively by the Bureau of Agricultural Economics, the Production and Marketing Administration, and the American Dry Milk Institute, Inc. The bulletin was published by the American Dry Milk Institute, Inc.

In general, direct consumer response to the merchandising of nonfat dry milks so far has been disappointing. There is little indication that the product has so far had satisfactory price or use appeal. Future expansion of the domestic market will depend mainly upon the development of consumer preferences for foods containing this product. Its nutritional values will mean little to the average housewife until she has acquired the habit of buying foods containing nonfat dry milk solids because she prefers their flavor, texture, appearance, and other qualities.

George H. Day
Bureau of Agricultural Economics

Correction

A line was left out of "Table 1—Economic Classes of Farms" on page 2 of the December 1948 issue of *The Agricultural Situation*. This table was included in the story, "How Many Farms . . . How Big," by Sherman E. Johnson and Kenneth L. Bachman. The line deleted was for "Small family farms." The figures are: Number of farms, 28.4 percent; farm population, 28.5 percent; farm acreage, 18.1 percent; gross value of farm production, 17.1 percent.

Prices of Farm Products

[Estimates of average prices received by farmers at local farm markets based on reports to the Bureau of Agricultural Economics. Average of reports covering the United States weighted according to relative importance of district and State]

Commodity	5-year average		Dec. 15, 1947	Nov. 15, 1948	Dec. 15, 1948	Parity price, Dec. 15, 1948
	August 1909-July 1914	January 1935- December 1939				
Wheat (bushel)-----dollars--	0.884	0.837	2.79	2.04	2.05	2.18
Rye (bushel)-----do-----	.720	.554	2.45	1.51	1.47	1.78
Rice (bushel)-----do-----	.813	.742	⁴ 2.89	2.33	2.50	2.01
Corn (bushel)-----do-----	.642	.691	2.37	1.21	1.23	1.59
Oats (bushel)-----do-----	.399	.340	1.18	.756	.765	.986
Barley (bushel)-----do-----	.619	.533	2.00	1.15	1.13	1.53
Sorghum grain (100 pounds)-----do-----	1.21	1.17	3.61	2.14	2.19	2.99
Hay (ton)-----do-----	11.87	8.87	18.10	18.40	19.10	29.30
Cotton (pound)-----cents-----	12.4	10.34	⁴ 34.05	30.52	29.63	30.63
Cottonseed (ton)-----dollars-----	22.55	27.52	94.80	69.00	68.80	55.70
Soybeans (bushel)-----do-----	1.96	.954	3.69	2.36	2.36	² 2.37
Peanuts (pound)-----cents-----	4.8	3.55	10.1	10.6	10.5	11.9
Flaxseed (bushel)-----dollars-----	1.69	1.69	⁴ 6.66	5.74	5.75	4.17
Potatoes (bushel)-----do-----	¹ .697	.717	1.72	1.44	1.54	1.83
Sweetpotatoes (bushel)-----do-----	.878	.807	2.04	1.98	2.19	2.17
Apples (bushel)-----do-----	.96	.90	⁴ 2.22	2.35	2.54	2.37
Oranges on tree (box)-----do-----	¹ 2.29	1.11	.69	.66	.99	3.73
Hogs (hundredweight)-----do-----	7.27	8.38	⁴ 25.20	21.80	21.10	18.00
Beef cattle (hundredweight)-----do-----	5.42	6.56	⁴ 19.50	21.40	20.50	13.40
Veal calves (hundredweight)-----do-----	6.75	7.80	⁴ 21.90	24.90	24.90	16.70
Lambs (hundredweight)-----do-----	5.88	7.79	21.30	22.00	21.90	14.50
Butterfat (pound)-----cents-----	26.3	29.1	87.7	64.3	65.7	⁶ 71.2
Milk, wholesale (100 pounds)-----dollars-----	1.60	1.81	5.08	⁴ 4.83	4.81	⁶ 4.32
Chickens (pound)-----cents-----	11.4	14.9	25.2	29.3	30.7	28.2
Eggs (dozen)-----do-----	21.5	21.7	58.7	58.3	52.8	⁶ 64.3
Wool (pound)-----do-----	18.3	23.8	⁴ 41.6	45.5	45.7	45.2

¹ Comparable base price, August 1909-July 1914.

² Comparable price computed under the Steagall amendment.

³ 1919-28 average of \$1.12 per bushel used in computing parity.

⁴ Revised.

⁵ 1919-28 average for computing parity price.

⁶ Adjusted for seasonal variation.

Economic Trends Affecting Agriculture

Year and month	Industrial production (1935-39 = 100) ¹	Income of industrial workers (1935-39 = 100) ²	1910-14=100					Index of prices received by farmers (August 1909-July 1914=100)			
			Average earnings of factory workers	Whole-sale prices of all commodities ³	Prices paid by farmers		Farm wage rates ⁴	Livestock and products			
					Com-modities	Com-modities, interest, and taxes		Dairy products	Poultry and eggs	Meat animals	All live-stock
1910-14 average.....	58	50	100	100	100	100	100	100	101	101	101
1915-19 average.....	72	90	152	158	151	150	148	148	154	163	158
1920-24 average.....	75	122	221	160	161	173	178	159	163	123	142
1925-29 average.....	98	129	232	143	155	168	179	160	155	148	154
1930-34 average.....	74	78	179	107	122	135	115	105	94	85	93
1935-39 average.....	100	100	199	118	125	128	118	119	109	119	117
1940-44 average.....	192	238	325	139	150	147	212	162	146	171	164
1945 average.....	203	291	403	154	180	172	350	197	196	210	203
1946 average.....	170	275	391	177	202	193	378	242	198	256	240
1947 average.....	187	332	440	222	246	231	408	269	221	340	293
1947											
December.....	192	364	471	238	262	245	-----	311	262	352	320
1948											
January.....	193	359	466	242	266	251	425	313	231	379	328
February.....	194	354	462	235	263	248	-----	307	218	331	300
March.....	191	358	466	236	262	247	-----	298	212	342	302
April.....	188	341	463	238	264	249	420	296	214	347	304
May.....	192	350	464	239	265	250	-----	291	211	361	309
June.....	192	361	472	243	266	251	-----	291	221	390	326
July.....	186	361	473	246	266	251	431	300	234	417	344
August.....	191	376	483	247	266	251	-----	305	247	411	344
September.....	192	380	483	246	265	250	-----	302	253	408	343
October.....	⁵ 195	-----	487	241	263	249	427	289	260	373	323
November.....	-----	-----	-----	239	261	247	-----	284	272	351	313
December.....	-----	-----	-----	-----	261	247	-----	283	260	339	305

Year and month	Index of prices received by farmers (August 1909-July 1914=100)									Parity ratio ⁶
	Crops								All crops and live-stock	
	Food grains	Feed grains and hay	To-bacco	Cotton	Oil-bearing crops	Fruit	Truck crops	All crops		
1910-14 average.....	100	101	102	96	98	99	-----	99	100	100
1915-19 average.....	193	164	187	168	187	125	-----	168	162	106
1920-24 average.....	147	126	192	189	149	148	143	160	151	86
1925-29 average.....	140	119	172	145	129	141	140	143	149	89
1930-34 average.....	70	76	119	74	72	94	106	86	90	66
1935-39 average.....	94	95	175	83	106	83	102	97	107	84
1940-44 average.....	123	119	245	131	159	133	172	143	154	103
1945 average.....	172	161	366	171	215	220	224	201	202	117
1946 average.....	201	195	382	228	244	226	204	226	233	121
1947 average.....	271	246	380	261	335	194	249	261	278	120
1947										
December.....	318	305	377	275	367	149	294	281	301	123
1948										
January.....	322	318	377	267	377	135	320	284	307	122
February.....	251	261	374	248	333	136	320	257	279	112
March.....	260	284	372	256	339	140	295	262	283	115
April.....	268	291	371	275	351	142	340	276	291	117
May.....	261	282	370	284	357	141	262	267	289	116
June.....	249	278	370	284	364	155	213	261	295	118
July.....	240	256	370	266	366	172	213	253	301	120
August.....	227	235	386	245	310	183	172	236	293	117
September.....	223	223	406	250	282	185	150	231	290	116
October.....	226	192	418	251	270	174	176	227	277	111
November.....	234	181	412	246	283	157	186	224	271	110
December.....	236	184	415	239	283	164	209	228	268	109

¹ Federal Reserve Board represents output of mining and manufacturing; monthly data adjusted for seasonal variation.

² Compute from data furnished by Bureau of Labor Statistics and Interstate Commerce Commission on pay rolls in mining, manufacturing, and transportation; monthly data adjusted for seasonal variation. Revised August 1948.

³ Bureau of Labor Statistics.

⁴ Monthly data adjusted for seasonal variation.

⁵ Preliminary.

⁶ 1924 only.

⁶ Ratio of prices received to prices paid for commodities, interest and taxes.

Outlook Highlights

(Continued from page 5)

More Pigs Next Spring

Farmers intend to have 14 percent more sows bred for farrowing this spring than last, according to the December pig report. If litters are of average size, crop will be up 10 percent from that of 1948.

The 1948 fall pig crop was 8 percent larger than in the fall of 1947. This brought the total 1948 crop to 85,281,000, a slight gain over 1947.

Big Winter Wheat Crop Seen

Farmers seeded 61,370,000 acres to winter wheat this fall, 5 percent more than the 1947 record and a fourth more than the 10-year average, according to the first official report on the new crop. Condition of the crop on December 1 indicated a yield averaging 15.7 bushels per acre; total production at 965 million bushels, 3 percent less than in 1948.

More Government Trading

The trend toward government-to-government trading in grain at fixed prices that began before the war increased in importance last year. More than three-fourths of the 450 million bushels of wheat and flour exported by nations other than the United States in 1947-48 moved under bilateral agreements.

Main motives behind these agreements are: (1) The desire of importing countries to assure a stable supply; (2) desire of exporters to find an assured outlet for exportable surpluses; (3) desire of both to find a means of solving balance of payments and other exchange problems.

These agreements probably will not affect United States exports greatly as long as foreign demand for cereals remains near postwar levels. Later on, however, United States foreign outlets could be narrowed down considerably unless other means of trade are developed.

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